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# Piracy Revisited: Exploring Music Users in the Age of Technology Dependency

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**Abstract**

This paper empirically investigates and characterizes users of recorded music, both downloaders and purchasers. To this end we analyse the role of the variables defining the different segments of music users. In doing so, we have considered two main traits influencing the use of music. First, objective variables such as demographics, music consumption habits, music genres and technology. Second, subjective variables such as motives and attitudes towards piracy. Using data from a personal survey, subsequent latent class and fuzzy analyses show that while the former characteristics are relevant in those getting music for free from the Internet, the latter don´t pay any special part, contrary to what literature had suggested. Specifically, we find evidence of age, gender, technology, and genre of music confirming previous studies carried out on this topic before the existing gap in the literature. However, there is no evidence of these variables defining patterns of purchase behaviour.

**Keywords:** recorded music; downloading; purchase; segmentation; fuzzy analysis.

**JEL classification:** M300; M310.

*"Don't think revenge is a path to happiness"*
*Cards to your Heart (Groove Armada)*

## 1. INTRODUCTION

Based on a detailed review of the literature on music piracy, apparently the interest on the topic faded out by 2010 after years of a certain abundance along with the strict anti-piracy measures. The latter were established by some governments after intense lobbying activities by the music industry. Specifically, more severe encryption standards plus stricter norms and regulations, such as the three strikes French anti-piracy law, were driven to

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reduce illegal copies, mainly counterfeited Cds purchases and free downloadings from peer-to peer platforms (Papadopoulos, 2004). However, the large share of music downloaders (see Montoro-Pons and Cuadrado-Garcia, 2016) along with the decline of sales of recorded music (Fundación Sgae, 2017), shows the limited effectiveness of coercive measures. In other words, those measures didn't prevent consumers from keeping on getting music for free. The music industry, specifically record labels, have had to rethink their business and marketing strategies and adapt to new ways of selling and distributing.

Music downloading has been considered in most academic studies as music piracy. Literature on this topic emerged from research into software piracy (d'Astous *et al.*, 2005), as they were both considered minor offences only threatening intellectual property (Gupta *et al.*, 2004; Longsdon *et al.*, 1994), although some differences between them have been noted (Gopal *et al.*, 2004). Sociodemographic profile, attitude towards computers, risk of being caught (and punished) and others have been variables used in software research based on the theory of reasoned action by Fishbein and Ajzen (1975) and its extension by Ajzen (1985) i.e. theory of preplanned behaviour. All these have been then applied to music piracy.

From the marketing perspective, existing studies on music piracy have addressed the issue from two perspectives: general consumer behaviour and ethical behaviour. Most of these studies emerged at the end of the 90´s and prior to 2010 with marginally fewer studies being carried out in last years.

Within the first group, there are studies that have analysed the consequences of Napster´s closure on purchasing intention (Colbert *et al.*, 2003), have segmented music users (Cuadrado *et al.*, 2009), or have studied the Internet effect on legal music purchasing behaviour (Walsh *et al.*, 2003). Variables that have been identified playing a key role in explaining music piracy include music variety available online, immediacy, past behaviour (having getting music for free before), individual perceived capacity for piracy, perception of what others expect of us (d'Astous *et al.*, 2005), and socio-demographic variables. All these variables have shown a positive influence on behaviour intention but socio-demographics. As for the latter research was not conclusive (Bhattacharjee *et al.*, 2003; d'Astous *et al.*, 2005; Hoon Ang *et al.*, 2001; Tan, 2002; Tom *et al.*, 1998; Wee *et al.*, 1995). However some of the empirical associations found include: a gender-effect, men perceive piracy more positively than women; an age-effect, older people were less likely to pirate; and no significant effects for other variables such as level of income and education (Kwong *et al.*, 2003).

The second group of studies analyses the relationship between attitude towards music piracy and intention (Chiou *et al.*, 2005; d'Astous *et al.*, 2005; Kwong *et al.*, 2003) as well as the ethical aspect of such behaviour. The common denominator of the former studies is the different conceptualization of the variable "attitude towards piracy" (see Hoon Ang *et al.*, 2001; Miquel and Cuadrado, 2006; Tom *et al.*, 1998; Wee *et al.*, 1995). There are also studies based on existing research related to ethically questionable behaviour (mainly software piracy, purchase of counterfeit goods and music piracy over the Internet) aiming at deepening the knowledge of consumer intention to pirate music over the Internet (Lluch *et al.*, 2010). The latter have considered the main antecedents of attitude towards ethically questionable behaviour such as singer/band idolization (Chiou *et al.*, 2005; Raviv *et al.*, 1996), perceived importance (Robin *et al.*, 1996), perceived usefulness (Goles *et al.*, 2008), subjective norms (Augusto de Matos *et al.*, 2007), personal loss (Gupta *et al.*, 2004), functional and prosecution risk (Banerjee *et al.*, 1998; Cheng *et al.*, 1997; Simpson *et al.*,

1994); habit or past extension (Eagly and Chaiken, 1995). To sum up, both groups of research have generally considered the influence of socio-demographic variables on individuals' intention of downloading, although as pointed above research has not been conclusive.

Most recent studies, fewer in number, have continued the same previous trends, testing different attitude-intention models, in which several aspects of consumer behaviour, including moral and ethical judgements are considered (e.g. Cesareo and Pastore, 2014; Alleyne *et al.*, 2015), or focusing mainly on individual's moral issues (eg. Woolley, 2015). It is worthy to note that their approaches to the topic have been from a national-level perspective (e.g. Das *et al.*, 2014; Myrthianos *et al.*, 2016). However, other studies have focused on analysing the experience of new formats of music consumption such as streaming (e.g. Sinclair and Tinson, 2017), identifying typologies of co-creational marketing in the music industry (e.g. Gamble and Gilmore, 2013) or simply analysing the evolution of the industry from new approaches (e.g. Saren, 2015).

With this recent evolution of the music industry different business models coexist, and hence different ways of using music. The transitory effects of downloads observed in the past have given way to permanent ones, with consumers having incorporated alternative means of accessing contents, including downloads, streaming and others. This situation calls for a reassessment of the different profiles of music users, specifically revisiting piracy. The aim of this paper is twofold. First to identify the variables associated with music use and the impact they have on the alternative ways of obtaining it. Second, to reassess the central role of socio-demographics given the increasing share of digital natives music users.

The rest of the paper is organized as follows. Next, comes a description of the exploratory research undertaken. Then main findings will be discussed. Finally, conclusions, implications and limitations will be considered.

## 2. THE EMPIRICAL RESEARCH

### 2.1 Objective and methodology

As the foregoing discussion has shown, this paper aims at analysing the role of different variables characterizing segments of music users. Specifically, we aim at identifying whether demographics (age and gender), music genres, devices used to listen to music (mobile vs. non-mobile), and perceptions about negative consequences of music downloading can characterize the way individuals get recorded music (purchase versus downloading). We also investigate whether genres of choice classify users in terms of specific patterns or music tastes and if these are linked to specific ways of music use.

In order to gather the information for testing the previous propositions, a descriptive research was undertaken by using personal interviews. A quota sample (based on age and gender) of 420 residents in Spain, from 18 to 65 years old, who usually listen to music, were interviewed in November 2016. Different scales were used in the questionnaire. The way of getting recorded music was measured by a constant sum scaling, where individuals had to allocate 100 points among four different alternatives: physical purchase (CDs, vinyl or others), payment downloading, payment subscription and free downloading. In relation to music genres respondents were presented with the classification proposed by the Survey of Habits and Cultural Practices in Spain (Ministerio de Educacion Cultura y Deporte, 2015) in order to

select the three ones respondents like the most. Devices for listening to music were organized in two: non-mobile devices (Hi-fi, TV, DVD) and mobile devices (Mp3, Smartphone, tablet). Consequences of downloading on both society and the music industry were measured through a 5-point 3-item Likert scale (being 1 = strongly disagree, and 5 = strongly agree). Finally, age was an open-ended question and gender a dichotomous one.

### 2.2 FsQCA: Preparing data

Fuzzy-set qualitative comparative analysis (FsQCA) was employed to analyse the data. The fundamentals of this technique are to study in detail how causal conditions lead to a particular outcome. In our case, two outcomes have been considered: getting recorded music through purchase, and getting recorded music through downloading. The causal conditions are the variables identified as leading to the outcome: in our analysis, these are the genres of music listened to, devices used –mobile or non-mobile-, negative perceptions about music downloading, gender and age. This configurational approach permits complexity to be captured, as it identifies sets of different configurations (consisting of patterns of attributes or causal conditions, Fiss, 2007) that collectively exhaust a large fraction of the phenomenon under consideration (Miller and Friesen, 1984). As Isaksson and Woodside (2017, p. 87) posit, "*building from complexity theory, a configurational analysis includes the propositions that a complex multiple recipe lead to the same outcome (equifinality tenet) whereby variables (ingredients) found to associate causally in one configuration may be absent in another recipe or even inversely related in a third recipe associated with this same outcome* ". Accordingly, FsQCA describes cases as the combination of causal conditions and the outcome rather than constituting just a single condition (Ragin, 2000, 2008), and in each combination, causal conditions can be present or absent.

Accordingly, within the context that this methodology offers, our purpose was on one hand, a) to test whether the same causal conditions (present or absent) could lead the individual to buy or to download recorded music, and on the other hand, b) to identify possible different "recipes" (causal configurations based on the causal conditions considered) to explain the same outcome, i.e. to buy recorded music in one case and to download it in another case.

FsQCA can be used with scales of different nature (e.g. ratio, dichotomous, etc.), but causal conditions have to be one single item. Therefore, perceptions about piracy, measured through a three-item scale, was then summarized in a single item by calculating the mean value of the three items of the scale. Additionally, a list of sixteen music genres was included in the questionnaire with respondents selecting their preferred ones. To summarize the observed patterns of music tastes a latent class analysis was performed and, based on the Bayes information criterion, a three-class solutions was deemed as optimal. The classes were labelled as fringe (users of non-mainstream music genres, including jazz, classical music, jazz and blues), popular (users of mainstream genres, namely international pop-rock and latin pop-rock and hip-hop), and peculiar (users of more specific genres such as flamenco, singer-songwriter and adult).

Moreover, the technique requires variables to be transformed into calibrated sets, as the relationships among the different variables are best understood in terms of set membership (Fiss, 2007). Ragin (2008, p. 30) defines a fuzzy set as "*a continuous variable that has been purposefully calibrated to indicate degree of membership in a well-defined and specified*

*set*". In fsQCA, calibration is the procedure to translate construct measures into fuzzy set membership scores. All fuzzy set values for all simple causal conditions range from 0.00 (denoting no set membership) to 1.00 (denoting full set membership) and these values indicate the degree of membership of the case in each causal condition. The transformation of variables into calibrated set is done by fsQCA software, but the researcher has to specify the original values for the three breakpoints (full membership, full non-membership, and a cross-over point, which is the point of maximum ambiguity) to let the software calibrate all remaining scores.

In our study, calibration of perceptions about consequences of downloading, measured on a 5-point Likert scale, followed the procedure by Ordanini *et al*. (2014): the full membership threshold was fixed at the rating of 4, the full non-membership threshold was fixed at 2, and the crossover point was fixed at 3. Regarding age, the full membership threshold was fixed at 55 years old (generation X), the full non-membership threshold was fixed at 35 years old (millennials), and the crossover point was fixed at 45 years old. In both outcome variables (getting recorded music through physical music purchase and through downloads) the calibration considered the same thresholds: for full membership the individual had to purchase (or download) equal or more than 60% of the recorded music he/she gets; for full non-membership, equal or less than 25% of all the recorded music the individual gets, and the crossover point was set at 40%.

Additionally, dichotomous variables were recoded into 0 (absence, full non membership) and 1 (presence, full membership). Each class of music genre was coded as 1 if the individual belongs to it and 0 otherwise. The device to listen to music was coded as 1 if the individual used a mobile device and 0 a non-mobile device (so, he/she used just a static device). Finally, female was coded as 1 and male as 0.

## 3. RESULTS

Table no. 1 shows the analysis of the truth table for music downloaders. It allows for the calculation of the sufficiency of the causal conditions. According to Ragin (2000), the causal condition is sufficient to lead to the outcome if, for each case, the fuzzy membership value of the causal condition X is less than or equal to the fuzzy membership value of the outcome Y (Ragin, 2000). Table no. 1 shows the intermediate solution and the analysis reaches the minimum criteria for consistency and coverage considered adequate for sufficiency (.75 and .60 respectively). Consistency assesses to the degree to which the cases sharing a given causal condition or combinations of causal conditions agree in exhibiting the outcome in question (Fiss, 2011; Ragin, 2006). Overall solution coverage refers to the amount of cases that download, are explained by the solutions provided as a whole. More precisely, in this case the eight solutions provided explain 63% of the individuals declaring downloading recorded music.

**Table no. 1 – Causal configurations leading to get recorded music through music downloading**

| Configuration | Solutions | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** |
| Fringe music | ø | ø | ● | ø | ● | ø | ø | ● |
| Popular music | ø | ● | ø | ● | ø | ø | ● | ø |
| Peculiar music | ● | ø | ø | ø | ø | ● | ø | ø |
| Negative percept. about free downloading | ø | ø | | | ø | ● | | ● |
| Use of mobile device to listen to music | ● | ● | | ● | ● | | ● | ● |
| Millennials | | | ● | ● | | ● | ø | ø |
| Woman | | | ● | ø | ø | ● | ● | |
| Raw coverage | .15 | .09 | .18 | .08 | .03 | .07 | .06 | .08 |
| Unique coverage | .12 | .03 | .19 | .05 | .02 | .04 | .04 | .05 |
| Consistency | .81 | .84 | .91 | .82 | .84 | .81 | .73 | .86 |

*Note: Overall solution coverage: 0.63; Overall solution consistency: 0.84; [a] Black circles ● indicate the presence of a condition, and circles with ø indicate its absence.*

According to Table no. 1, individuals belonging to the fringe segment, who download music are:

- Millennial women (solution 3); being this the largest group.
- Men, listening to music through a mobile device, not perceiving negative consequences of music downloading (solution 5).
- Generation X individuals, listening to music through mobile devices, not perceiving negative consequences of music downloading (solution 8).

Individuals belonging to the popular segment, who download music are:

- Individuals listening to music through a mobile device, not perceiving negative consequences of free music downloading (solution 2)
- Millennial men who listen to music through mobile devices (solution 4)
- Generation X women who listen to music through mobile devices (solution 7)

Finally, individuals belonging to the peculiar segment, downloading music are:

- Individuals listening to music through a mobile device, who do not perceive negative consequences of music downloading (solution 1)
- Millennial women who perceive negative consequences from free music downloading.

From these results, it should be pointed out:

- Gender and age appear in five of the eight causal configurations: being a millennial and/or a woman is linked to music downloading.
- The use of mobile devices to listen to music is also associated to music downloading, as it becomes evident in six out of eight solutions.
- Negative perceptions about music downloading are not a barrier to download music: two of the eight solutions show individuals being aware of them but downloading music. One solution is linked to millennial women (solution 6) and the other with Generation X (solution 8).
- Music tastes, as reflected by class membership, are not linked to downloading.

We have also analysed those who purchase music. However, the analysis did not show appropriate thresholds regarding consistency and coverage for interpreting them. So, we conclude that, based on the variables (causal conditions) considered in this study, no specific patterns of purchasers can be identified. In other words, those causal conditions can't be linked to the purchase of music.

### 3.1 Testing predictive validity

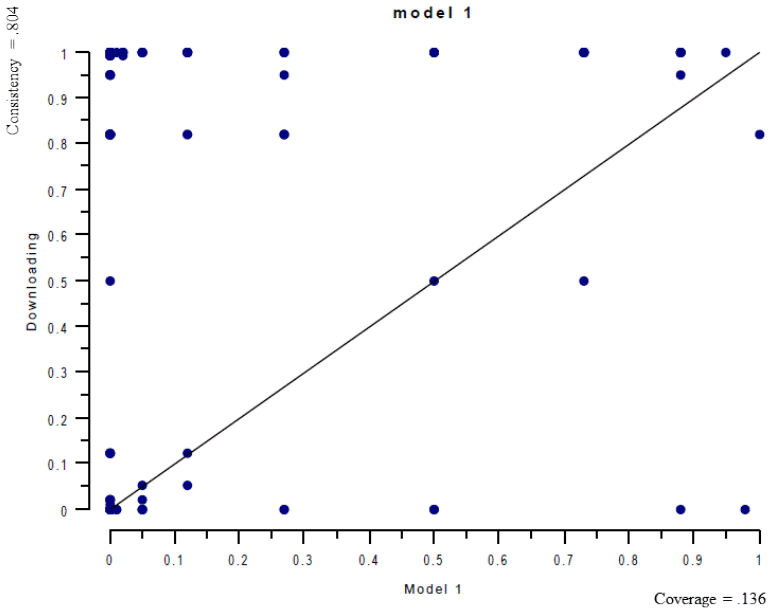
Following previous studies (e.g. Pappas *et al.*, 2017; Woodside, 2014; Wu *et al.*, 2014), and in order to test predictive validity, the sample was randomly split into a modelling subsample and a holdout sample, and then the analysis was run again for each one. In predictive validity testing, the overall solution consistency and coverage for the subsample should be similar to that of the whole sample, whereas the configurations for the subsample are not expected to be the same (Pappas *et al.*, 2017). Table no. 2 shows that the overall solution consistency and coverage are similar to those for the whole sample. We can also see that certain solutions, e.g. solution 1, appear in both analyses.

**Table no. 2 – Predictive validity: causal configurations for the subsample**

| Configuration | Solutions | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** | **10** |
| Fringe music | ø | ø | ø | ● | ø | ø | ● | ø | ø | ● |
| Popular music | ø | ● | ● | ø | ø | ø | ø | ● | ● | ø |
| Peculiar music | ● | ø | ø | ø | ● | ● | ø | ø | ø | ø |
| Negative percept. about free downloading | ø | ø | ø | ø | ● | | ● | ● | ● | |
| Use of mobile device to listen to music | ● | ● | ● | ● | | ● | ● | ● | | ● |
| Millennials | | ● | | ● | ● | ø | ø | ø | ● | ● |
| Woman | | | ø | | ● | ø | | ● | ø | ● |
| Raw coverage | .15 | .07 | .05 | .07 | .07 | .04 | .07 | .05 | .08 | .16 |
| Unique coverage | .11 | .02 | .01 | .02 | .04 | .02 | .05 | .04 | .04 | .11 |
| Consistency | .82 | .93 | .95 | .95 | .84 | .78 | .96 | .75 | .78 | .92 |

*Note: Overall solution coverage: 0.68; Overall solution consistency: 0.85; [a] Black circles ● indicate the presence of a condition, and circles with ø indicate its absence.*

The results presented in Table no. 2 were then tested against the second (holdout) sample. Figure no. 1 only shows the results for solution 1, although all the solutions were tested and results of predictive tests are available upon request. As each solution involved different causal configurations, i.e. the combination of several causal conditions in our study, it was necessary to model each configuration as a variable using the appropriate FsQCA software function. For the solution 1 in subsample 1, the values of (raw) coverage and consistency are similar with those resulting from testing the same solution using data from the holdout sample (coverage=0.14 and consistency=0.80; see Figure no. 1). Predictive tests for all solutions for each outcome suggest that the highly consistent models for the subsample have high predictive abilities for the holdout sample, and vice versa. To sum up, this discussion confirms that the solutions shown in Table no. 1 are robust.




*Note: Each dot in the XY plot represents one or more cases (i.e., individuals) in the study—some individuals have the same scores in the plot.*

**Figure no. 1 – Test of model 1 from subsample using data from holdout sample**

## 4. CONCLUSIONS

The music industry has dramatically evolved for last years, coexisting nowadays different ways of using music. In this era of technology dependency music downloading from the Internet has consolidated as a general mean of accessing contents, as well as others such as streaming. This scenario called for research of music users and then revisiting music piracy, quite a relevant topic in the management and marketing literature in the last decade of the 20th century and following years.

Within this context, after reviewing literature in the field, a survey was undertaking with the aim of identifying variables associated with music consumption and their effect on the different ways people use to obtain recorded music. Besides, assessing the role of socio-demographic variables was considered important, not only given the increasing proportion of digital natives music users but also to contrast previous studies considering their influence on individuals intention of downloading, as results have not been conclusive.

The use of Fuzzy-set qualitative comparative analysis with the gathering data has produced remarkable results. Demographic variables such as gender and age plus the use of mobile devices to listen to music are heavily associated to music downloading. Specifically, being a millennial is linked to this way of getting recorded music. Nevertheless, negative perceptions about music piracy are not barriers for downloading. In a similar way music genres preferences, reflected by class membership, are not linked to downloading. These results contrast with those studies showing subjective characteristics as main drivers of getting music from the Internet. Finally, no specific patterns of purchasers were identified, meaning that any of the previous variables can't be linked to the purchase of music.

Regarding the use of fsQCA, two limitations should be highlighted. First, the fact that results rely on the values of calibration thresholds and frequency cut-off selected by the researcher criteria as Krogslund *et al.* (2015) pointed out. Second, this analysis does not quantify the specific influence of each single variable on the outcome (Pappas *et al.*, 2017; Woodside, 2013).

Thus, it can be highlighted that results seem to be relevant enough as they show that neither anti-piracy measures nor persuasion to make users change their attitudes towards ethical values (e.g. Regulations or information campaigns to show users the impact of such behaviour) worked. The music industry should keep on finding out different options to make music accessible to users considering technology dependency in today´s society.

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